OCCUPATIONAL ANALYSES SERIES

Construction Electrician

1994

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Construction Electrician

1994

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OTHER RELATED OCCUPATIONAL TITLES

This analysis covers tasks performed by a construction electrician whose occupational title has been identified by some provinces and territories of Canada under the following names:

Electrical Construction
Electrician
Electrician (Construction)
Electrician (Construction and Maintenance)

LIST OF PUBLISHED OCCUPATIONAL ANALYSES *

Aircraft Gas Turbine Engine Repair and Overhaul Technician (1992)

Aircraft Structural Repair Technician (1992)

Aquaculture Technician (1977)

Arts Administrator (1989)

Automotive Service Technician (1990)

Automotive Technician - Automatic Transmission (1990)

Automotive Technician - Electrical/Electronics (1992)

Automotive Technician - Engine Repair and Fuel Systems (1989)

Automotive Technician - Front-End (1989)

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Blaster (Surface) (1987)

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Cement Finisher (1983)

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Cook (1991)

Electrical Mechanic (1981)

Electronics Technician Vol. I (1986)
(Video Equipment)

Electronics Technician Vol. II (1986)
(Audio Equipment)

Electronics Technician Vol. III (1986)
(Computer Equipment)

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* **Red Seal analyses are indicated in bold.**

Electronics Technician Vol. IV (1986)
(Office Equipment)

Electronics Technician Vol. VI (1986)
(Communication Equipment)

Electronics Technician Vol. VII (1986)
(Signaling Equipment)

Electronics Technician Vol. VIII (1986)
(Navigation Equipment)

Electronics Technician Vol. IX (1986)
(Video Game Equipment)

Electronics Technician Vol. X (1987)
(CADD Equipment)

Electronics Technician Vol. XI (1987)
(CAM Equipment)

Electronics Technician Vol. XII (1987)
(Robotics Equipment)

Electronics Technician Vol. XIII (1987)
(Biomedical and Laboratory Equipment)

Electronics Technician Vol. XIV (1987)
(Industrial Process-Control Equipment)

Farm Equipment Mechanic (1994)

Floorcovering Installer (1991)

Glazier (1994)

Hairstylist (1992)

Heating (Gas and Oil) Servicer - Commercial and Industrial (1978)

Heavy Equipment Mechanic (1987)

Heavy Equipment Operator (1983)

Industrial Electrician (1987)

Industrial Instrument Mechanic (1988)

Industrial Mechanic (Millwright) (1988)

Insulator (Heat and Frost) (1993)

Ironworker (Generalist) (1993)

Lather (Interior Systems Mechanic) (1994)

Lineman (1988)

Logistics (1992)

Machinist (1992)

Major Electrical Appliance Repairer (1984)

Mobile Crane Operator (1992)

Motor Vehicle Body Repairer (1989)

Motor Vehicle Repairer (Truck and Transport) (1983)

New Home Builder and Residential Renovation Contractor (1992)

Oil and Solid Fuel Heating Mechanic (1986)

Painter and Decorator (1993)

Plumber (1989)

Power Engineer (1986)

Refrigeration and Air-Conditioning Mechanic (1989)

Roofer (1991)

Sheet Metal Worker (1990)

Sprinkler System Installer (1986)

Steel Fabricator (Filter) (1994)

Steamfitter-Pipefitter (1989)

Tool and Die Maker (1992)

Truck-Trailer Repairer (1994)

Welder (1989)

REQUESTS FOR THESE PUBLICATIONS SHOULD BE FORWARDED TO:

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K1A 0J9

FOREWORD

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to co-operate with provincial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. To this end, Human Resources Development Canada sponsors a program, under the guidance of the Canadian Council of Directors of Apprenticeship (CCDA), to develop a series of occupational analyses.

The Occupational Analysis Program has the following objectives:

- to identify and group the tasks performed by skilled workers in particular occupations;

- to identify those tasks that are performed by skilled workers in every province and territory;

- to develop instruments for use in the preparation of interprovincial standards "Red Seal" examinations and curricula for training leading to the certification of skilled workers;

- to facilitate the mobility, in Canada, of trainees and skilled workers; and

- to supply employers and employees, and their associations, industries, training institutions and governments with analyses of the tasks performed in particular occupations.

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GUIDE TO ANALYSIS

DEVELOPMENT OF ANALYSIS

A draft analysis is developed by a knowledgeable consultant who, with the assistance of a committee of industry experts in the field, identifies all the tasks performed in the occupation.

The draft is then assigned to occupational analysts at Human Resources Development Canada for review, translation and edit to ensure conformity with the nationally approved format.

The analysis is forwarded to provincial/territorial authorities for validation by specialists in the field. Their recommendations are assessed and incorporated into the final draft which also includes the identification of the common core tasks performed in the occupation.

The occupational analysis is published in both official languages.

STRUCTURE OF ANALYSIS

To facilitate the understanding of the nature of the occupation, the work performed is divided into the following divisions:

A. **BLOCK** - is the largest division within the analysis and reflects a distinct operation relevant to the occupation.

B. **TASK** - is the distinct activity that, combined with others, makes up the logical and necessary steps the worker is required to perform to complete a specific assignment within a "BLOCK".

C. **SUB-TASK** - is the smallest division into which it is practical to sub-divide any work activity and, combined with others, fully describes all duties constituting a "TASK".

Enabling Objectives

The element of skill and knowledge that an individual must acquire to perform the task adequately.

Trend

Any shifts or changes in technology that affect the sub-tasks are identified under this heading.

VALIDATION METHOD

At the request of the Canadian Council of Directors of Apprenticeship (CCDA), the Standardization Sub-Committee developed a method for the validation of the national Red Seal occupational analyses.

A draft of the analysis is sent to all provinces/territories for validation. Each jurisdiction rates the sub-tasks and applies percentage ratings to blocks and tasks. This method for the validation of the national occupational analyses identifies common core tasks across Canada for a specific occupation. This feature facilitates the weighting of the Interprovincial Red Seal examinations.

DEFINITIONS

YES:	the sub-task is performed.
NO:	the sub-task is not performed.
BLOCK %:	the average time a worker spends performing each block in a given year in relation to other blocks of the analysis, taking into consideration the complexity (importance plus difficulty) of the block. (See Appendices "C" and "D" for numerical and graphical representations of this specific occupation.)
TASK %:	the average time a worker spends performing each task in relation to other tasks within the block, taking into consideration the complexity (importance plus difficulty) of the task. (See Appendix "C" for numerical representation of this specific occupation.)
NV:	Not Validated by the province/territory.
ND:	Not Designated in that province/territory.

COMMON CORE

The criteria for determining common core are dependant on the performance of sub-tasks. If 70% of the responding jurisdictions (excluding NVs and NDs) perform the sub-task, it shall be considered common core.

In the analysis, Block A is reserved for safety practices. Since safety practices are a mandatory feature of all occupations, it is considered common core and ratings are not required.

Interprovincial Red Seal examinations are based on the common core identified through this validation process.

SCOPE OF ANALYSIS

This analysis describes the duties of a construction electrician who has the knowledge and skill to build and install a variety of electrical systems in residential, commercial and industrial structures. Since it is the responsibility of the construction electrician to ensure that the installation is in proper working order prior to electrical inspection, this occupational analysis also includes the ability to troubleshoot and repair or reinstall electrical systems as necessary. The construction electrician should also be able to overhaul electrical systems in any of the above-mentioned areas. These activities call upon the construction electrician to safely remove electrical services and systems as well as assess the suitability of existing services for future applications. This analysis extends as far as the skills and knowledge required to service and maintain operational electrical systems.

This occupational analysis is broad in scope and encompasses an extremely large variety of skills and knowledge. The contributors to this analysis felt that the descriptions herein provided a good model for the construction electrician occupation. While a certain basic level of proficiency is expected of the construction electrician in all areas described, it is admitted that construction electricians tend to specialize in certain installations or in certain areas, such as residential construction. Thus, as in other fields, it is normally observed that individuals tend to be more proficient in those areas of their most recent specialization.

The development of this analysis posed a persistent dilemma related to the depth of detail that was required in describing each task. In many instances, the sub-task statements that were being recorded were relatively complex procedures in their own right. The solution that was adopted was to create a "Basic Trade Practices" block to describe those activities in greater and sufficient detail. Members of the development committee unanimously agreed that an individual who was a master of all of the tasks described in the "Basic Trade Practices" block would be an extremely competent and valuable employee.

In this analysis, the word "designs" is used in several task statements to describe a cognitive activity that a construction electrician would perform in planning the layout and subsequent construction of an electrical service. This usually occurs in residential construction. In this context, "designs" is not meant to imply the kind of activity normally performed by an engineer. In those cases where an engineered design is available, the construction electrician would lay out and erect the service in compliance with that design and other imperatives such as electrical code and local bylaws. However, in the absence of an engineered design, the construction electrician would be required to perform an integrated design and layout activity.

The analysis also contains a block entitled "Basic Job Skills". This block was created to describe the behaviours and attitudes that employers expect of their employees in the construction electrician trade. This block therefore contains items such as the ability to work cooperatively with others, especially those working in other trades, the ability to predict construction sequences and plan one's own work accordingly and the ability to accurately complete all required documentation required by the employer and other authorities.

OBSERVATIONS AND TRENDS ARISING FROM ANALYSIS

Traditionally, duties of electricians have largely remained unchanged. Generally, wiring methods are the same as they have been for 20 years. The basic materials used in the trade, such as conduit, conductors, switches and disconnects, are also largely the same. Also the installation procedures of motors and generators have not change, even though the efficiency of such equipment is constantly being improved.

There is a growing demand for electrical systems that are comprised of energy control and monitoring devices to meet energy conservation needs. The sophistication of an integrated energy management system has been traditionally reserved for the commercial and industrial sectors. However, it is anticipated that the technology will next penetrate the residential construction market where consumers are also placing a greater emphasis on energy efficiency and power management. In fact, to a limited extent, this is already occurring. This trend will intensify the pressures for electricians to update their knowledge and skills in the installation of electronic devices with solid state components. It was noted that increased applications of solid state devices and increased usage of low voltage wiring has reduced the amount of labour and material required to complete many jobs.

Technological advances in electronics continue to infiltrate the traditional duties of electricians. Many electricians view this as a critical issue which will lead either to fragmentation of the trade into two components: traditional electricians and those with knowledge and skills in electronics, or a consolidation of the trade that would be inclusive of electronics. Many feel that it is too difficult for journeyperson electricians to keep up with the advancements in electronics and should rather concentrate on the traditional duties.

A growing area in the field is the installation of data and communication cables. Electricians are also laying, but not connecting fibre optic cables. It was felt that in the future, and with a small amount of specialized training, electricians could also perform the connections on fibre optic cables. Since substantial growth is anticipated in the area of fibre optic cable installation and connection, electricians should obtain the necessary training to take advantage of the opportunities that will follow.

Another expanding area in the field is in the installation of fire alarm systems. The increased use of multiplex systems in new, and renovated alarm systems has permitted the growth of specialized installation companies that do not use electricians for fire alarm installations. Electricians may be required to be certified to install fire alarm systems. A similar set of circumstances exists in the area of neon sign installation. If the training opportunities are not provided for electricians, these activities could, in the future, be lost to the trade.

For the future, electricians will continue to be obliged to coordinate their activities with those of other specialized workers in the construction field, in order to optimize the construction sequence. This will place emphasis on an individual's interpersonal and teamwork skills which are attributes that have not been traditionally highly regarded in the trades. However, in an increasingly competitive environment, it was felt that attitudes and behaviours that minimize the incidence of repair and rework will clearly improve the prospects for both individual electricians and the companies that hire them.

ANALYSIS

BLOCK A SAFETY

Task 1 Demonstrates safe working practices and techniques.

Trend: New environmental initiatives mean increased emphasis on safety and safety training.

	Sub-tasks	Enabling Objectives	Tools & Equipment
1.01	Evaluates work site conditions and identifies hazards.	knowledge of safe work practices and procedures	
		ability to recognize and counteract weather-related hazards such as ice and wind	
		knowledge of hazards associated with hoisting and rigging procedures	
		knowledge of hazards associated with various forms of welding	
1.02	Practices good housekeeping.	knowledge of proper storage procedures	
		ability to maintain a clean and orderly work area	
		ability to properly dispose of waste material	
1.03	Maintains tools in safe operating condition.	knowledge of proper storage of tools	
		knowledge of regular maintenance procedures and schedules	
		ability to recognize and report defects in equipment	
1.04	Uses and wears personal protection equipment.	knowledge of proper donning and doffing of personal protective equipment	safety glasses, hard hats, welding helmets, ear plugs, face shields, dust mask, respirator,

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of proper storage and maintenance of personal safety gear	safety boots, gloves, fire resistant clothing, safety harness, self-contained breathing apparatus
1.05	Uses hand and power tools in manner that ensures safety of self and others.	knowledge of safe work practices and procedures knowledge of regular maintenance procedures and schedules ability to recognize defects in equipment	hand tools, power tools
1.06	Works safely on scaffolds and ladders.	knowledge of hazards associated with working at heights	
1.07	Operates emergency safety equipment.	knowledge of locations of safety equipment knowledge of proper use of safety equipment	eye wash stations, fire extinguishers, stretcher/back board, ventilation equipment
1.08	Assures protection from fire hazards.	ability to recognize and report potential fire hazards knowledge of safe storage of combustible materials	
1.09	Assures protection from electrical shock.	knowledge of Canadian Electrical Code knowledge of safe work practices and procedures	
1.10	Handles, stores and properly disposes of hazardous materials.	knowledge of Workplace Hazardous Materials Information Systems (WHMIS) regulations distinguish the roles and responsibilities of various interveners	

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of environmental regulations with regards to the disposal of products	
1.11	Uses proper rigging and hoisting procedures.	knowledge of safe rigging and hoisting procedures	rigging equipment, tuggers, hoists, come-alongs
		knowledge of safe work practices and procedures	
1.12	Recognizes warning signs and danger tags.	knowledge of warning signs and danger tags	
		ability to interpret signs and tags	
1.13	Identifies and properly labels energized equipment.	ability to identify energized equipment	
		ability to interpret labels	
1.14	Applies cardiopulmonary resuscitation (CPR) and basic first aid.	knowledge of basic first aid procedures	
		ability to use first aid equipment	
1.15	Observes limits of approach to high voltage equipment.	knowledge of approach limits	
1.16	Operates electrical testing equipment safely.	knowledge of Canadian Electrical Code	
		ability to use appropriate testing equipment	
		knowledge of safe work practices and procedures	
1.17	Operates powder actuated tools in safe manner.	knowledge of safe work practices and procedures	
		knowledge of equipment	
1.18	Interprets government regulations and safety	knowledge of Workers' Compensation Board (WCB) regulations	

	Sub-tasks	Enabling Objectives	Tools & Equipment
	standards.	knowledge of Occupational Health and Safety regulations (provincial and federal)	
		knowledge of WHMIS regulations	
		knowledge of additional government regulations	
1.19	Complies with company safety regulations.	knowledge of company regulations	
1.20	Completes written safety and injury reports.	knowledge of government and company regulations for reporting injuries	
		knowledge of consequences of non-compliance with reporting procedures	
1.21	Reports injuries to immediate supervisor.	knowledge of government and company regulations for reporting injuries	
		knowledge of consequences of non-compliance with reporting procedures	
1.22	Demonstrates safe work practice in all work activities.	ability to work with due consideration to the safety of fellow workers	
		ability to model safe working practice	
1.23	Implement padlocking procedures to live equipment.	knowledge of padlocking procedures	

BLOCK B BASIC TRADE PRACTICES

Task 2 **Installs disconnect devices such as switches and breakers.**

Trend: No apparent change.

	Sub-tasks	Enabling Objectives	Tools & Equipment
2.01	Determines type and size of load.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
2.02	Determines type, size and protection rating (if required) of disconnect device according to specifications.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
2.03	Mounts disconnect device and terminates conductors.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of safe working practices (SWP) knowledge of wiring methods	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
2.04	Energizes and tests device for proper operation.	knowledge of alternative current (AC) systems knowledge of SWP	multimeter

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 3 **Installs raceways.**

Trend: There is more frequent use of new labour-saving materials such as polyvinyl chloride (PVC) conduit (Corflex). Increased requirements for fire barriers in new construction.

	Sub-tasks	Enabling Objectives	Tools & Equipment
3.01	Interprets drawings, plans and specifications.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to read and understand plans/ specifications knowledge of symbols knowledge of materials	engineering scales

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

3.02	Determines type and size of conduit, tray, wireway, busway or underfloor raceway from plans, specifications and codes.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials	

	Sub-tasks	Enabling Objectives	Tools & Equipment
		ability to interpret manufacturer's specifications/technical data knowledge of building construction techniques	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

3.03	Determines routing of raceway.	knowledge of common construction procedures and methods ability to interpret plans and specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

3.04	Designs support system for conduit, tray, wireway, busway or underfloor raceway, if applicable.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to interpret specifications knowledge of materials and their applications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

3.05	Identifies and acquires required materials.	knowledge of materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

3.06	Installs conduit, tubing, tray, wireway, busway or	ability to use hand and power tools knowledge of SWP	hand tools, power tools, rigging equipment, ladders,

	Sub-tasks	Enabling Objectives	Tools & Equipment
	underfloor raceway and fittings.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of safe rigging practices ability to use oxy-acetylene and arc welding equipment	scaffolding, arc and oxy-acetylene welding equipment

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

3.07	Grounds and bonds raceway.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to use basic tools knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

3.08	Installs fire barriers on wall and floor openings.	knowledge of Canadian Electrical Code aware of other applicable codes and by-laws knowledge of materials ability to interpret manufacturer's specifications knowledge of SWP	hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	no	yes	yes	NV	NV

Task 4 **Installs conductors in raceways.**

Trend: Increasing use of new wire-pulling lubricants.

	Sub-tasks	Enabling Objectives	Tools & Equipment
4.01	Interprets drawings, plans and specifications.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of symbols knowledge of materials ability to read and understand drawings/specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

4.02	Determines type, colour coding and size of conductor, if necessary.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials ability to interpret customer's and manufacturer's specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

4.03	Inserts conductor into raceway.	knowledge of wiring methods	hand tools, power tools, wire loop, ladder, scaffolding

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
4.04	Secures conductors as applicable.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to interpret manufacturer's specifications	hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 5 **Terminates, splices and connects cables/conductors (ground, power, control, signal, communication and data including fibre optic cables).**

Trend: Increasing use of labour-saving termination kits. Increased use of thermography in quality control assurance.

	Sub-tasks	Enabling Objectives	Tools & Equipment
5.01	Determines appropriate splicing methods.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of manufacturer's data knowledge of wiring methods	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

5.02	Prepares conductor for termination.	knowledge of wiring methods knowledge of Canadian Electrical Code	hand tools

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

5.03	Splices or connects cable using solderless connectors.	knowledge of wiring methods	hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

5.04	Solders cables, if necessary.	knowledge of soldering techniques	soldering iron

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	no	yes	yes	yes	yes	NV	NV

5.05	Makes compression connections.	knowledge of wiring methods ability to interpret manufacturer's specifications	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

5.06	Makes mechanical connections.	knowledge of wiring methods knowledge of torquing specifications ability to use torquing tools	hand tools, torque wrench

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
5.07	Makes punch down connections.	knowledge of wiring methods knowledge of SWP	hand tools, punch down tool

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	no	yes	yes	yes	yes	NV	NV

5.08	Protects splices/joints with heat shrink, rubber tape, etc., if required.	knowledge of materials knowledge of SWP	heat gun, hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 6 **Installs direct-buried cables and/or conductors.**

Trend: There is a tendency toward increasing the spacing requirements of underground cables.

	Sub-tasks	Enabling Objectives	Tools & Equipment
6.01	Determines type and size of cable.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to interpret manufacturer's specifications ability to interpret plans and specifications	manufacturer's manuals

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

6.02	Consults local utility authorities and	knowledge of applicable local by-laws

	Sub-tasks	Enabling Objectives	Tools & Equipment

determines routing of trench.

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

6.03 Digs and/or supervises digging of trench.

knowledge of Canadian Electrical Code

knowledge of other applicable codes and by-laws

ability to interpret manufacturer's specifications

shovels, trenching devices

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

6.04 Installs sand bedding and prepares trench for cables.

knowledge of Canadian Electrical Code

knowledge of other applicable codes and by-laws

ability to interpret manufacturer's specifications

shovels

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

6.05 Identifies phasing of underground cable.

knowledge of Canadian Electrical Code

knowledge of other applicable codes and by-laws

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
6.06	Lays cable in trench.	knowledge of proper spacing techniques	shovels, backoe

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

6.07	Completes sand bedding and installs mechanical protection and warning tape during backfill.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

6.08	Makes proper connections of cable.	knowledge of wiring methods knowledge of SWP knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

6.09	Performs preliminary fault test on underground cable.	knowledge of testing procedures ability to use megohmmeters	megohmmeter, hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 7 **Installs surface mount and/or overhead cables.**

Trend: Increasingly, cable is being used instead of conduit in an effort to reduce labour costs.

	Sub-tasks	Enabling Objectives	Tools & Equipment
7.01	Determines type and size of cable.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to interpret plans and specifications ability to interpret manufacturer's specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

7.02	Determines cable routing.	ability to interpret plans and specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

7.03	Determines supports and protection for cable.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of manufacturer's recommendations	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

7.04	Installs and fastens cable.	knowledge of Canadian Electrical	hand tools, power

	Sub-tasks	Enabling Objectives	Tools & Equipment
		Code	tools, scaffolding, staging equipment
		knowledge of other applicable codes and by-laws	
		knowledge of SWP	
		knowledge of wiring methods	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

7.05	Connects and terminates cable.	knowledge of wiring methods	hand tools, power tools
		knowledge of Canadian Electrical Code	
		knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

7.06	Performs preliminary test on surface mount cable.	ability to use megohmmeters	megohmmeter, hand tools
		knowledge of testing procedures	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 8 **Installs lighting systems.**

Trend: There has been an increased use of modular lighting systems and energy efficient lighting systems.

	Sub-tasks	Enabling Objectives	Tools & Equipment

8.01 Interprets plans and/or specifications.

ability to read and interpret plans/specifications

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

8.02 Consults with customer to determine light level requirements, if necessary.

knowledge of lighting systems

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

8.03 Consults with customer to determine type of lighting required.

knowledge of lighting systems

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

8.04 Lays out lighting system.

knowledge of Canadian Electrical Code

knowledge of other applicable codes and by-laws

ability to interpret manufacturer's specifications

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

8.05 Identifies and acquires materials.

knowledge of materials

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

8.06 Installs lighting supports.

knowledge of Canadian Electrical

hand tools, power

	Sub-tasks	Enabling Objectives	Tools & Equipment
		Code	tools, ladder, scaffolding
		knowledge of other applicable codes and by-laws	
		ability to interpret manufacturer's specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

8.07	Installs recessed, surface, incandescent, fluorescent, and high-intensity discharge (HID) fixtures.	knowledge of Canadian Electrical Code	hand tools, power tools, rigging equipment
		knowledge of other applicable codes and by-laws	
		knowledge of wiring methods	
		knowledge of SWP	
		ability to interpret manufacturer's specifications	
		knowledge of safe rigging practices	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

8.08	Terminates and connects fixture to branch circuit wiring.	knowledge of wiring methods	hand tools, power tools
		knowledge of Canadian Electrical Code	
		knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
8.09	Installs lighting system control(s).	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP ability to interpret manufacturer's specifications	hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

8.10	Tests fixture and ensures proper operation.	knowledge of wiring methods knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of troubleshooting techniques	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 9 **Installs electrical heating/cooling and heat tracing systems.**

Trend: In certain parts of the country, there are fewer installations of electrical heating systems. In other areas, electrical heating systems are very commonly installed. Electrical heating systems more frequently include energy conservation (electronic) controls.

	Sub-tasks	Enabling Objectives	Tools & Equipment
9.01	Interprets plans and/or specifications.	ability to read and interpret specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

9.02	Consults with customer to determine heating/cooling requirements, if necessary.	knowledge of electrical heating systems ability to deal with customers	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	no	NV	NV

9.03	Consults with customer to determine type of heating/cooling system required.	ability to deal with customers knowledge of electrical heating systems ability to interpret manufacturer's specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

9.04	Performs necessary calculations to determine heating/cooling requirements.	ability to perform calculations knowledge of local ambient factor knowledge of design requirements	calculator

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	no	yes	yes	yes	no	NV	NV

9.05	Lays out heating/cooling system.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	hand tools

Sub-tasks	Enabling Objectives	Tools & Equipment
	ability to interpret manufacturer's specifications	
	knowledge of layout procedures	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	no	NV	NV

9.06	Identifies and acquires required materials.	knowledge of materials	
		knowledge of Canadian Electrical Code	
		knowledge of other applicable codes and by-laws	
		ability to interpret manufacturer's specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

9.07	Installs branch circuit wiring.	knowledge of Canadian Electrical Code	hand tools
		knowledge of other applicable codes and by-laws	
		knowledge of wiring methods	
		knowledge of SWP	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

9.08	Installs baseboard, fan-forced, ramp, radiant, duct, heat tracing and hydronic heating systems and cooling equipment.	knowledge of Canadian Electrical Code	hand tools
		knowledge of other applicable codes and by-laws	

	Sub-tasks	Enabling Objectives	Tools & Equipment
		ability to interpret manufacturer's specifications knowledge of wiring methods knowledge of SWP	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

9.09	Terminates and connects heating/cooling system to branch circuit wiring.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to interpret manufacturer's specifications knowledge of wiring methods knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

9.10	Installs associated heating/cooling system controls.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods ability to interpret manufacturer's specifications knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
9.11	Tests heating/cooling system and ensures proper operation.	knowledge of testing procedures ability to use multimeter/ammeter	multimeter, ammeter, hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 10 **Determines and classifies hazardous locations for appropriate selection of materials and methods.**

Trend: There is an increasing awareness of and attention to safety concerns and identification of hazard locations.

	Sub-tasks	Enabling Objectives	Tools & Equipment
10.01	Interprets plans and/or specifications.	ability to read and interpret specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

10.02	Consults with owner/client to determine end use of area.	ability to interpret customer needs ability to communicate with customers	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

10.03	Determines class, division and group of work area in accordance with Canadian Electrical Code.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
10.04	Determines material requirements to satisfy classification.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials and applications ability to interpret manufacturer's specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 11 **Uses instruments to test and measure voltage, loads, ground faults, integrity of circuits, etc.**

Trend: Increasingly, electricians are using more sophisticated measuring equipment. Commonly, the meters are miniaturized with digital displays for ease of use and portability.

	Sub-tasks	Enabling Objectives	Tools & Equipment
11.01	Measures amperage in electrical systems.	knowledge of measuring procedures knowledge of SWP knowledge of alternative and direct currents (AC/DC) systems	ammeter, multimeter

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

11.02	Measures voltage in electrical systems.	knowledge of measuring procedures knowledge of SWP	voltmeter, multimeter

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of AC/DC systems	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

11.03	Measures resistance and/or continuity in electrical systems.	knowledge of measuring procedures knowledge of SWP knowledge of AC/DC systems	ohmmeter, megohmmeter, multimeter

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

11.04	Measures integrity of insulation in electrical systems.	knowledge of measuring procedures knowledge of SWP knowledge of AC/DC systems	megohmmeter, hi-pot tester

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

11.05	Measures lighting levels.	knowledge of measuring procedures	light meter

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

11.06	Determines phase sequence of electrical systems.	knowledge of three-phase AC systems knowledge of measuring procedures knowledge of SWP	phase rotation meter

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

11.07	Measures power consumption.	knowledge of measuring procedures	wattmeter

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of AC systems	
		knowledge of SWP	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

11.08	Measures frequency of alternating current.	knowledge of measuring procedures	oscilloscope, multimeter
		knowledge of AC systems	
		knowledge of SWP	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	no	yes	yes	yes	yes	NV	NV

Task 12 **Renovates electrical systems in residential or commercial structures.**

Trend: Increasingly, customers require upgrades of the size of system to accommodate the changes in their environment.

	Sub-tasks	Enabling Objectives	Tools & Equipment
12.01	Consults with owner/ client to determine needs.	ability to interpret customer needs	
		knowledge of Canadian Electrical Code	
		knowledge of other applicable codes and by-laws	
		ability to communicate with customers	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

12.02	Consults building plans, if available.	ability to read and interpret plans	

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of traditional construction methods	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

12.03	Assesses suitability of existing service and branch wiring.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials knowledge of traditional wiring methods	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

12.04	Disables existing service.	knowledge of SWP knowledge of wiring methods	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

12.05	Removes or dismantles existing equipment.	knowledge of wiring methods knowledge of SWP	hand tools, power tools, rigging equipment

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

12.06	Installs new service according to requirements.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods	hand tools, power tools, rigging equipment

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of SWP	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

12.07	Energizes panel and existing reusable branch circuits.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP	hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

12.08	Disables and/or removes, where possible, redundant branch circuitry.	knowledge of SWP knowledge of wiring methods	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

12.09	Installs new branch circuitry and associated devices.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP knowledge of wiring methods	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
12.10	Energizes and ensures proper operation of all devices.	knowledge of SWP knowledge of testing procedures	hand tools, testing apparatus

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 13 Grounds and bonds electrical equipment, systems and structures, including swimming pools and hot tubs.

Trend: Requirements for grounding and bonding are becoming more stringent. The grounding requirements for sophisticated electronic equipment are becoming more elaborate.

	Sub-tasks	Enabling Objectives	Tools & Equipment
13.01	Consults plans and Canadian Electrical Code, Part 1, to determine grounding requirements.	ability to read and interpret plans knowledge of Canadian Electrical Code	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

13.02	Lays out installation.	knowledge of materials and equipment knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

13.03	Determines materials required for installation.	knowledge of materials	

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

13.04	Installs ground mat, rods, grid, or bus and conductors.	knowledge of wiring methods knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP ability to interpret manufacturer's specifications	thermite welding equipment, hand tools, power tools, compression tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

13.05	Connects electrical system to mechanical systems, structural steel, etc.	ability to operate thermite welding equipment knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP	hand tools, power tools, thermite welding equipment

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
13.06	Connects lightning protection systems.	knowledge of materials knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP knowledge of wiring methods	hand tools, power tools, compression tools, metal-oxyde varistor

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

13.07	Tests and ensures integrity of grounding system.	knowledge of testing procedures	testing apparatus, hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 14 **Installs splitters, busways, pull boxes and junction boxes.**

Trend: No apparent change.

	Sub-tasks	Enabling Objectives	Tools & Equipment
14.01	Determines type and size of splitter, busway, pull box, or junction box according to specifications.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
14.02	Mounts splitter, busway, pull box, or junction box and terminates conductors.	knowledge of wiring methods knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

BLOCK C BASIC JOB SKILLS

Task 15 Completes required documentation related to job functions.

Trend: Increasing requirement for documentation of work practices.

	Sub-tasks	Enabling Objectives	Tools & Equipment
15.01	Completes forms related to acquisition and use of materials and tools.	knowledge of company procedures and policies	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
15.02	Documents changes to scope of work/ contract such as deletions and/or additions.	knowledge of company procedures and policies	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
15.03	Completes and certifies "application for inspection" forms.	knowledge of company procedures and policies	

(NOT COMMON CORE)

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	no	yes	yes	no	no	yes	NV	NV

15.04	Fulfils company reporting requirements, such as time sheets and accident reports.	knowledge of company procedures and policies	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 16 **Reads and interprets architectural, mechanical and electrical plans, specifications and codes.**

Trend: Contract documents are becoming less specific, thereby requiring electricians to be more knowledgeable of associated trade practices.

	Sub-tasks	Enabling Objectives	Tools & Equipment
16.01	Reads and interprets architectural plans and specifications.	ability to read and interpret plans and specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

16.02	Reads and interprets mechanical plans and specifications.	ability to read and interpret plans and specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
16.03	Reads and interprets electrical plans and specifications.	ability to read and interpret plans and specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
16.04	Relates architectural and mechanical plans and specifications to electrical requirements.	ability to integrate information from several sources	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
16.05	Interprets Canadian Electrical Code to ensure that work and materials are in compliance.	ability to read and interpret Canadian Electrical Code	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 17 Analyzes job requirements and coordinates resources and activities accordingly.

Trend: Requirements to work more efficiently and cooperate and coordinate with other tradespeople.

	Sub-tasks	Enabling Objectives	Tools & Equipment
17.01	Coordinates the sequence of installation.	knowledge of installation procedures ability to coordinate	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment

17.02 Coordinates work sequence with progress of other trades.

ability to cooperate with other trades

knowledge of building sequence

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

17.03 Supervises and/or coordinates work activities of fellow workers.

ability to supervise

ability to plan ahead

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

17.04 Plans work activities and time to complete tasks efficiently.

ability to work with others

ability to manage time

ability to coordinate activities

knowledge of construction sequences

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

17.05 Works effectively in groups.

ability to work in groups

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

BLOCK D DISTRIBUTION AND SERVICES

Task 18 Designs and constructs single-phase service for single or multimeter installations.

Trend: No apparent change.

	Sub-tasks	Enabling Objectives	Tools & Equipment
18.01	Interprets plans and/or specifications.	ability to read and understand plans/ specifications knowledge of electrical theory ability to consult with local utility	calculator

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

18.02	Determines service requirement for buildings, structures and dwellings in accordance with electrical code and supply authority.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to calculate ampacity requirements ability to consult with local utility	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

18.03	Determines location of service entrance.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to consult with local utility	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	no	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
18.04	Installs meter base and distribution panel.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP ability to consult with local utility	hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

18.05	Installs underground/overhead wiring and conduit.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of types of conduit and fittings knowledge of SWP ability to consult with local utility	hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

18.06	Connects service entrance to meter base and distribution panel.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to use hand tools knowledge of wiring methods knowledge of SWP	hand tools

	Sub-tasks	Enabling Objectives	Tools & Equipment
		ability to consult with local utility	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

18.07	Installs and tests grounding system.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP ability to use power tools ability to use hand tools ability to consult with local utility	sledgehammer, power tools, hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 19 Designs and constructs low voltage (30 to 750V) multiphase service for single or multimeter installations.

Trend: Manufacturers' specifications on spacing of single conductor cables may be at variance with Canadian Electrical Code. Increased use of digital metering systems is anticipated. There is a trend towards increased requirements for coordination of overcurrent protection on AC systems.

	Sub-tasks	Enabling Objectives	Tools & Equipment
19.01	Interprets plans and/or specifications.	ability to read and understand plans/ specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
19.02	Determines service requirements in accordance with electrical codes and supply authority.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to consult with local utility	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

19.03	Determines location of service entrance with supply authority.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to read and understand plans/ specifications ability to consult with local utility	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

19.04	Installs raceways or cables, if necessary.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of types of conduit and fittings ability to consult with local utility	hand tools, power tools, hydraulic benders and cutters

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
19.05	Installs main distribution and measuring equipment.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP knowledge of rigging practices ability to consult with local utility	power tools, hand tools, crane, block and tackle, dollies, pallet lifters, rollers, hoists, forklift

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

19.06	Installs and identifies main service feeders.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP knowledge of three-phase principles knowledge of manufacturer's product specifications ability to consult with local utility	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

19.07	Installs and tests grounding system.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods	hand tools, power tools, thermite welding equipment

Sub-tasks	Enabling Objectives	Tools & Equipment
	knowledge of SWP	
	ability to use thermite welding equipment	
	ability to consult with local utility	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

19.08	Inspects visually and tests installation.	knowledge of troubleshooting procedures	multimeter, megohmmeter, hand tools
		knowledge of AC systems	
		knowledge of SWP	
		ability to use multimeters and megohmmeters	
		ability to consult with local utility	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 20 Designs and constructs secondary distributions.

Trend: There is a greater requirement for increasing the size of neutral conductors. The requirement for isolated grounding systems is also increasing. These trends are the result of increased use of specialized electronic equipment.

	Sub-tasks	Enabling Objectives	Tools & Equipment
20.01	Interprets plans and/or specifications.	ability to read and understand plans/specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
20.02	Determines service requirements in accordance with electrical codes.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to calculate ampacity requirements	calculator

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
20.03	Determines length and size of feeders.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	tape measure, hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
20.04	Installs raceways and/or cables.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
20.05	Installs over-current device on secondary distribution.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	hand tools

Sub-tasks		Enabling Objectives		Tools & Equipment
		knowledge of wiring methods		
		knowledge of SWP		

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

20.06	Installs secondary devices such as splitters, switches, transformers, phase converters, etc.	knowledge of Canadian Electrical Code		hand tools, power tools
		knowledge of other applicable codes and by-laws		
		knowledge of wiring methods		
		knowledge of SWP		

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

20.07	Installs, identifies and connects feeders.	knowledge of Canadian Electrical Code		hand tools, drill, tugger, crimper
		knowledge of other applicable codes and by-laws		
		knowledge of wiring methods		
		knowledge of SWP		

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

20.08	Installs grounding system, tests and ensures its integrity.	knowledge of AC systems		megohmmeter, multimeter
		ability to use megohmmeters and multimeters		
		knowledge of SWP		

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
20.09	Inspects visually and tests installation.	knowledge of SWP knowledge of AC systems knowledge of troubleshooting procedures ability to use megohmmeters and multimeters	megohmmeter, multimeter, hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 21 Installs high voltage (greater than 750V) systems.

Trend: High voltage termination kits are becoming easier to install because of prefabrication of stress cones by manufacturers. Infra-red testing is used to identify potential faults in terminations and equipment. There is a trend towards increased requirements for coordination of overcurrent protection on AC systems.

	Sub-tasks	Enabling Objectives	Tools & Equipment
21.01	Interprets plans and/or specifications.	ability to read and understand plans/ specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	no	yes	yes	yes	yes	NV	NV

21.02	Installs raceways and/or conductors.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP knowledge of wiring methods	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	no	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
21.03	Installs high voltage equipment.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP knowledge of safe rigging practices	power tools, hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	no	yes	yes	yes	yes	NV	NV

21.04	Installs high voltage terminations.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP knowledge of manufacturers' specifications	hand tools, compression tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	no	yes	yes	yes	yes	NV	NV

21.05	Installs and tests grounding system.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP knowledge of wiring methods knowledge of earth resistance testing	hand tools, megohmmeter, thermite welding equipment, jumper wire

	Sub-tasks	Enabling Objectives	Tools & Equipment
		ability to use megohmmeters	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	no	yes	yes	yes	yes	NV	NV

21.06	Tests high voltage cables and terminations for insulation faults.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP knowledge of manufacturers' specifications	hi-pot tester

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	no	yes	yes	yes	yes	NV	NV

Task 22 Installs transformers in low voltage (30V - 750V) distribution systems.

Trend: There is an increased use of isolation transformers.

	Sub-tasks	Enabling Objectives	Tools & Equipment
22.01	Determines type and size of transformer according to specifications.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

22.02	Verifies appropriate primary conductor size and protection.	knowledge of Canadian Electrical Code	

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of other applicable codes and by-laws	
		knowledge of materials	
		knowledge of manufacturers' ratings	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

22.03	Determines location site and mounting requirements.	knowledge of Canadian Electrical Code	
		knowledge of other applicable codes and by-laws	
		knowledge of manufacturers' specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

22.04	Mounts transformer.	knowledge of SWP	power tools
		knowledge of safe rigging practices	
		knowledge of Canadian Electrical Code	
		knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

22.05	Grounds transformer.	knowledge of wiring methods	hand tools, compression tools
		knowledge of Canadian Electrical Code	
		knowledge of other applicable codes and by-laws	

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of SWP	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

22.06	Identifies and connects appropriate primary and secondary taps.	knowledge of wiring methods knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of transformers ability to interpret manufacturer's specifications	hand tools, compression tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

22.07	Energizes and tests primary and secondary voltages.	knowledge of SWP knowledge of AC systems knowledge of troubleshooting procedures ability to use multimeters and megohmmeters	multimeter, megohmmeter

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 23 Installs panel boards.

Trend: There is a greater requirement for increasing the size of neutral conductors. The requirement for isolated grounding systems is also increasing. These trends are the result of increased use of specialized electronic equipment.

	Sub-tasks	Enabling Objectives	Tools & Equipment
23.01	Determines type and size of load.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials ability to read plans and interpret specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

23.02	Determines type and size of panel boards according to specifications.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to read plans and interpret specifications knowledge of materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

23.03	Mounts and secures panel to appropriate surface.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
23.04	Installs conduits, cables, etc. into panel.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP	hand tools, conduit benders

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

23.05	Ensures proper grounding/bonding of the panel.	knowledge of wiring methods knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP	hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

23.06	Installs branch breakers, fuses and verifies proper position.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP knowledge of wiring methods	hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

23.07	Tests branch circuits for voltage, load, ground faults and phase balance.	knowledge of Canadian Electrical Code	multimeter

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of other applicable codes and by-laws	
		knowledge of SWP	
		ability to use multimeters	
		knowledge of troubleshooting procedures	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

23.08	Identifies and labels branch circuits on panel directory.	knowledge of circuitry	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

23.09	Repositions breakers or clears ground faults.	knowledge of Canadian Electrical Code	hand tools, multimeter
		knowledge of other applicable codes and by-laws	
		knowledge of wiring methods	
		knowledge of SWP	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

BLOCK E BRANCH CIRCUIT WIRING

Task 24 Plans installation of branch circuits.

Trend: Electricians are more frequently required to install telephone and coaxial cabling in both residential dwellings and commercial buildings; advent of home automation systems which will have implications on wiring methods.

	Sub-tasks	Enabling Objectives	Tools & Equipment
24.01	Interprets plans and/or specifications.	ability to read and understand plans/specifications knowledge of materials knowledge of symbols	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

24.02	Identifies list of materials.	knowledge of materials knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

24.03	Plans branch circuits according to specifications.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	tape measure, marker

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
24.04	Marks locations of devices.	knowledge of conventions regarding locations of devices	hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 25 Roughs in branch circuits.

Trend: New fastening methods and modular wiring systems are increasingly available and future increased use of these can be expected.

	Sub-tasks	Enabling Objectives	Tools & Equipment
25.01	Installs boxes.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

25.02	Installs vapour barriers.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

25.03	Drills holes in studs/ joists.	knowledge of Canadian Electrical Code	power drill

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of other applicable codes and by-laws ability to use power tools	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

25.04	Installs branch circuit conductors.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	hand tools, ladder

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

25.05	Strips sheath and installs conductors into box/ panel.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of stripping methods knowledge of wiring methods	hand tools, hacksaw

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

25.06	Bonds box.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	screwdrivers, pliers

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

25.07	Completes joints and/or splices.	knowledge of Canadian Electrical Code	hand tools

Sub-tasks	Enabling Objectives	Tools & Equipment
	knowledge of other applicable codes and by-laws	
	knowledge of wiring methods	
	knowledge of AC circuit and power systems	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 26 Finishes branch circuits.

Trend: While there is no apparent change in the installation of traditional systems, a trend is emerging in the use of automated home systems, especially in new home construction.

	Sub-tasks	Enabling Objectives	Tools & Equipment
26.01	Installs devices such as switches, receptacles, plates, smoke alarms, etc.	knowledge of Canadian Electrical Code	hand tools
		knowledge of other applicable codes and by-laws	
		ability to use hand tools	
		knowledge of wiring methods	
		knowledge of materials	
		knowledge of AC systems	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

26.02	Installs lighting fixtures in accordance with electrical code.	knowledge of Canadian Electrical Code	hand tools

Sub-tasks	Enabling Objectives	Tools & Equipment
	knowledge of other applicable codes and by-laws	
	knowledge of wiring methods	
	knowledge of materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

26.03	Installs over-current devices and connects conductors.	knowledge of Canadian Electrical Code	hand tools
		knowledge of other applicable codes and by-laws	
		knowledge of wiring methods	
		knowledge of SWP	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

26.04	Identifies and labels branch circuits on panel directory.	knowledge of circuits	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

26.05	Checks and verifies operation of all devices.	knowledge of AC systems	multimeter, circuit tester
		ability to use multimeters and circuit testers	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

26.06	Ensures integrity of grounding system.	knowledge of AC systems	multimeter, megohmmeter, circuit tester

Sub-tasks	Enabling Objectives	Tools & Equipment
	ability to use multimeters and circuit testers	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

BLOCK F MOTORS AND MOTOR CONTROLS

Task 27 Installs AC and DC motors.

Trend: The use of DC motors is declining. High efficiency motors are encountered more frequently.

	Sub-tasks	Enabling Objectives	Tools & Equipment
27.01	Determines type, size and current load of motor.	knowledge of motors and applications knowledge of ratings and classifications ability to interpret customer requirements knowledge of phase converters	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

27.02	Performs calculations to determine protection (overload/over-current)	knowledge of Canadian Electrical Code	

	Sub-tasks	Enabling Objectives	Tools & Equipment
	of motor.	knowledge of other applicable codes and by-laws ability to perform relevant calculations ability to interpret manufacturer's specifications knowledge of equipment	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

27.03	Calculates size of motor feeders.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to perform calculations	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

27.04	Determines size and type of starter and disconnects.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to interpret manufacturer's specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

27.05	Installs manual, magnetic, combination, soft start, variable speed, and electronic starters.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	hand tools, power tools

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of wiring methods ability to interpret manufacturer's specifications knowledge of SWP	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

27.06	Installs disconnecting means.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods ability to interpret manufacturer's specifications knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

27.07	Installs overload and overcurrent protection devices.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods ability to interpret manufacturer's specifications knowledge of SWP	hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
27.08	Installs AC/DC motor where applicable and in cooperation with other trades.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods ability to interpret manufacturer's specifications knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

27.09	Installs conductors and cables.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods ability to interpret manufacturer's specifications knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

27.10	Terminates connections.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods ability to interpret manufacturer's specifications	hand tools, power tools

Sub-tasks		Enabling Objectives		Tools & Equipment
		knowledge of SWP		

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

27.11	Energizes and ensures proper operation and rotation of motor in cooperation with other trades.	knowledge of SWP knowledge of motors	ammeter, voltmeter, phase rotation meter, megohmmeter, hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 28 Installs controls for AC and DC motors.

Trend: There is an increased trend towards the use of solid state components.

Sub-tasks		Enabling Objectives		Tools & Equipment
28.01	Interprets plans and wiring diagrams.	ability to read and interpret wiring diagrams ability to interpret manufacturer's specifications		

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

28.02	Determines number and type of control devices required.	ability to interpret customer requirements knowledge of controls knowledge of Canadian Electrical Code	

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

28.03	Determines locations and layout of control devices.	knowledge of layout procedures	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

28.04	Assembles and installs components.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP ability to interpret manufacturer's specifications knowledge of materials	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

28.05	Installs cables and conductors for devices.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP ability to interpret manufacturer's specifications	hand tools, power tools

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

28.06	Terminates connections.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP ability to interpret manufacturer's specifications knowledge of materials	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

28.07	Tests motor and controls to ensure proper integrated function.	knowledge of control systems knowledge of testing procedures	hand tools, testing apparatus

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

BLOCK G CONTROLS AND AUTOMATION SYSTEMS

Task 29 **Installs programmable logic controllers (PLC) and associated devices.**

Trend: Increasing trend towards inclusion of energy management and other automated systems into residential and commercial buildings.

	Sub-tasks	Enabling Objectives	Tools & Equipment
29.01	Consults specifications with owner/client to determine size and type of PLC.	knowledge of PLCs knowledge of automated systems ability to interpret customer requirements	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	no	yes	no	yes	yes	NV	NV

29.02	Lays out system, if required.	knowledge of PLCs knowledge of programming knowledge of materials ability to interpret manufacturer's specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

29.03	Installs PLC unit.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials knowledge of wiring methods	hand tools, power tools

Sub-tasks		Enabling Objectives	Tools & Equipment
		ability to interpret manufacturer's specifications	
		knowledge of SWP	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

29.04	Installs field devices.	knowledge of Canadian Electrical Code	hand tools, power tools
		knowledge of other applicable codes and by-laws	
		knowledge of materials	
		knowledge of wiring methods	
		ability to interpret manufacturer's specifications	
		knowledge of SWP	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

29.05	Installs conductors between PLC control cabinet and all field devices.	knowledge of Canadian Electrical Code	hand tools, power tools
		knowledge of other applicable codes and by-laws	
		knowledge of wiring methods	
		knowledge of materials	
		knowledge of SWP	
		ability to interpret manufacturer's specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
29.06	Connects and terminates devices and controller.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of materials knowledge of SWP ability to interpret manufacturer's specifications	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

29.07	Programs controller.	knowledge of programming knowledge of manufacturer's requirements	programming device, technical manual

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

29.08	Tests and verifies proper operation of system.	knowledge of programming knowledge of materials	programming device, technical manual, multimeter

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 30 **Installs controls for heating and cooling equipment.**

Trend: There is a greater variety of energy efficient and electronic controls on the market.

	Sub-tasks	Enabling Objectives	Tools & Equipment
30.01	Consults plans and specifications and/or owner/client to determine requirements.	ability to read and interpret plans and specifications ability to interpret customer needs knowledge of materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

30.02	Identifies and determines installation locations for all component devices.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials ability to interpret manufacturer's specifications ability to plan installation in coordination with the progress of other trades	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

30.03	Installs components.	knowledge of installation procedures knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
30.04	Installs field wiring for all components.	knowledge of installation procedures knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

30.05	Terminates field wiring to devices/components.	knowledge of installation procedures knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

30.06	Cooperates with related trades to test and verify proper operation of heating or cooling system.	knowledge of systems	hand tools, testing apparatus

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 31 Installs lighting controls.

Trend: There is a greater variety of energy efficient and electronic controls on the market.

	Sub-tasks	Enabling Objectives	Tools & Equipment
31.01	Consults plans and specifications and/or owner/client to determine requirements.	ability to read and interpret plans and specifications ability to interpret customer needs knowledge of materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

31.02	Identifies and determines installation locations for all component devices.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials ability to interpret manufacturer's specifications ability to plan installation in coordination with the progress of other trades	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

31.03	Installs components.	knowledge of installation procedures knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods	hand tools, power tools

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of SWP	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

31.04	Installs field wiring for all components.	knowledge of installation procedures knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

31.05	Terminates field wiring to devices/components.	knowledge of installation procedures knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

31.06	Tests and verifies proper operation of lighting system.	knowledge of systems	hand tools, testing apparatus

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

BLOCK H ALARMS AND SIGNALLING SYSTEMS

Task 32 Installs fire alarm and paging (such as nurse call) systems.

Trend: Greater use of multiplex systems to integrate signalling systems with other building management systems.

	Sub-tasks	Enabling Objectives	Tools & Equipment
32.01	Consults plans and/or specifications to determine requirements.	ability to read and interpret plans and specifications knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws ability to interpret manufacturer's specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

32.02	Designs and obtains approval for fire alarm/paging systems.	knowledge of materials ability to interpret manufacturer's specifications knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

32.03	Consults appropriate authorities to determine	knowledge of procedures	

	Sub-tasks	Enabling Objectives	Tools & Equipment

requirements of local jurisdiction.

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

32.04 Identifies materials and lays out fire alarm/paging system.

knowledge of materials

knowledge of wiring methods

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

32.05 Installs conductors, cable and necessary supports, conduit, etc.

knowledge of wiring methods

knowledge of Canadian Electrical Code

knowledge of other applicable codes and by-laws

knowledge of materials

hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

32.06 Installs and connects signal, detection and ancillary devices.

knowledge of wiring methods

knowledge of Canadian Electrical Code

knowledge of other applicable codes and by-laws

knowledge of materials

hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

32.07 Installs main panel and terminates conductors.

knowledge of wiring methods

hand tools, power tools

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

32.08	Installs annunciation panel(s).	knowledge of wiring methods knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

32.09	Energizes, programs and tests fire alarm/paging system and corrects faults as necessary.	knowledge of system knowledge of basic electronics	hand tools, testing apparatus

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

32.10	Assists appropriate authority in verification/ certification of system.	knowledge of system knowledge of basic electronics	hand tools, communication apparatus

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 33 **Installs security, communication and data systems in offices, residences or industrial complexes.**

Trend: The market in this area continues to grow. These systems are more frequently composed of fibre optic cables.

	Sub-tasks	Enabling Objectives	Tools & Equipment
33.01	Consults plans/ specifications and/or client/owner to determine requirements.	ability to interpret customer requirements knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials ability to interpret manufacturer's specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

33.02	Identifies materials and lays out system.	knowledge of materials ability to interpret manufacturer's specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

33.03	Installs conductors, cable and necessary supports, conduit, etc.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods	hand tools, power tools

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of SWP	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

33.04	Installs and connects signal, detection and ancillary devices.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

33.05	Installs main panel, control panel and terminates conductors.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

33.06	Installs annunciation panel(s).	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods	hand tools, power tools

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of SWP	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

33.07	Energizes and tests system and corrects faults as necessary.	knowledge of systems	hand tools, testing apparatus

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

BLOCK I INSTALLATION OF POWER GENERATION, STAND-BY POWER GENERATION AND POWER CONDITIONING SYSTEMS

Task 34 Installs power generation systems and associated equipment.

Trend: Use of power generation stations is increasing. Co-generation systems may be used more frequently in the future.

	Sub-tasks	Enabling Objectives	Tools & Equipment
34.01	Interprets plans and/or specifications.	ability to read and interpret plans/specifications knowledge of equipment and materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
34.02	Evaluates equipment requirements and prepares site accordingly.	knowledge of equipment and materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

34.03	Coordinates contributions of other trades to installation of generator set.	knowledge of job sequence ability to work with other tradespeople ability to interpret mechanical/electrical plans/specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

34.04	Positions generator set on site.	knowledge of rigging procedures knowledge of SWP knowledge of crane signals knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	rigging equipment, tuggers, level, wrenches, rollers, jacks, crowbar

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

34.05	Installs transfer switch.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials	rigging equipment, hand tools, power tools

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of SWP	
		knowledge of rigging procedures	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

34.06	Installs additional equipment such as block heaters, batteries, charging systems and controls.	knowledge of Canadian Electrical Code	rigging equipment, hand tools, power tools
		knowledge of other applicable codes and by-laws	
		knowledge of SWP	
		knowledge of materials	
		knowledge of wiring methods	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

34.07	Determines material requirements to complete installation.	knowledge of materials	
		knowledge of Canadian Electrical Code	
		knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

34.08	Installs raceways and/or cables.	knowledge of wiring methods	hand tools, power tools
		knowledge of SWP	
		knowledge of Canadian Electrical Code	

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

34.09	Completes connections and terminates conductors.	knowledge of wiring methods knowledge of SWP knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

34.10	Tests and ensures proper voltage is correct and generator is in proper phase and synchronization.	knowledge of equipment knowledge of SWP ability to interpret manufacturer's specifications	testing apparatus, hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

34.11	Tests and ensures proper operation of transfer switch.	knowledge of equipment knowledge of SWP ability to interpret manufacturer's specifications	testing apparatus, hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

34.12	Tests generator, in cooperation with client	knowledge of equipment	load banks

	Sub-tasks	Enabling Objectives	Tools & Equipment
	and other trades, to ensure that it can accommodate the load.	knowledge of testing procedures	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

Task 35 Installs uninterruptible power supply (UPS) systems.

Trend: There is an increasing demand for uninterruptible power supply systems.

	Sub-tasks	Enabling Objectives	Tools & Equipment
35.01	Interprets plans and/or specifications.	ability to read and interpret plans/ specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

35.02	Evaluates power requirements and sizes equipment accordingly.	ability to interpret customer needs knowledge of equipment	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

35.03	Positions and installs battery racks.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP knowledge of materials	hand tools, power tools

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of wiring methods	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

35.04	Determines material requirements to complete installation.	knowledge of materials knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

35.05	Installs raceways and cables.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

35.06	Installs and connects UPS unit and related equipment according to manufacturer's specifications.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of wiring methods knowledge of SWP	hand tools, power tools, rigging equipment

	Sub-tasks	Enabling Objectives	Tools & Equipment
		ability to interpret manufacturer's specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

35.07	Tests and ensures proper operation of UPS unit.	knowledge of equipment knowledge of testing procedures	hand tools, testing apparatus

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 36 Installs battery operated emergency lighting systems.

Trend: High efficiency lamps are being used more frequently in exit lights and remote lighting heads.

	Sub-tasks	Enabling Objectives	Tools & Equipment
36.01	Interprets plans and/or specifications.	ability to read and interpret plans/ specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

36.02	Determines equipment requirements.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
36.03	Calculates appropriate wire size.	ability to calculate voltage drops knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

36.04	Determines material requirements to complete installation.	knowledge of materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

36.05	Installs raceways and cables.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP knowledge of wiring methods knowledge of materials	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

36.06	Installs battery packs, remote heads and exit lights.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP knowledge of wiring methods	hand tools, power tools

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

36.07	Tests and ensures proper operation of emergency lighting system.	knowledge of systems knowledge of materials knowledge of testing methods	testing apparatus, hand tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

Task 37 Installs power conditioning equipment on AC systems.

Trend: Increasing demand for cleaner and better regulated power to supply electronic equipment and to reduce utility costs.

	Sub-tasks	Enabling Objectives	Tools & Equipment
37.01	Interprets plans and/or specifications.	ability to read and interpret plans/ specifications	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

37.02	Evaluates requirements for power conditioning equipment on site.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
37.03	Determines material requirements to complete installation.	knowledge of materials	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

37.04	Installs raceways and cables.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP knowledge of wiring methods knowledge of materials	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

37.05	Installs capacitors, surge protectors, autotransformers, isolation transformers, filters, etc.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws knowledge of SWP knowledge of wiring methods knowledge of materials	hand tools, power tools

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

37.06	Completes connections and terminates conductors.	knowledge of Canadian Electrical Code knowledge of other applicable codes and by-laws	hand tools, power tools

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of SWP	
		knowledge of wiring methods	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

37.07	Tests system as appropriate.	knowledge of systems	testing apparatus, hand tools
		knowledge of materials	
		knowledge of testing methods	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

BLOCK J ROUTINE MAINTENANCE, TROUBLESHOOTING, REPLACEMENT AND REPAIR OF EQUIPMENT, COMPONENTS AND DEVICES

Task 38 Performs routine maintenance tests and checks on installed equipment, components and devices.

Trend: Trend towards enforcement of routine maintenance schedules. Greater expertise will be required because of design changes and technological advancements.

	Sub-tasks	Enabling Objectives	Tools & Equipment
38.01	Checks previous maintenance	ability to read and interpret plans and schematics	

	Sub-tasks	Enabling Objectives	Tools & Equipment

documentation, plans and schematics.

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

38.02 Consults with customer/ employer to identify problems and history.

ability to communicate effectively

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

38.03 Checks current loadings and voltage readings on terminations in wiring system.

knowledge of SWP

knowledge of Canadian Electrical Code

knowledge of manufacturer's specifications

knowledge of company procedures

multimeter, ammeter, voltmeter

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.04 Checks current loadings and voltage readings on terminations in wiring system.

knowledge of SWP

knowledge of Canadian Electrical Code

knowledge of manufacturer's specifications

knowledge of company procedures

fuse puller

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.05 Checks breaker and fuse sizing of wiring systems.

knowledge of SWP

screwdrivers, wrenches

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures ability to recognize poor termination	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.06	Makes visual inspection of grounding and bonding points.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.07	Checks voltage readings on PLC hardware.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of PLC operation ability to read ladder logic diagrams	multimeter, ammeter, voltmeter

	Sub-tasks	Enabling Objectives	Tools & Equipment
		ability to use electrical testing devices	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

38.08	Checks terminations on PLC hardware.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures	screwdrivers

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

38.09	Tests the operation of communication and alarm systems.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures	special system tools and equipment

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
no	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

38.10	Checks overload on motor controller for correct sizing.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures	manufacturer's overload charts

	Sub-tasks	Enabling Objectives	Tools & Equipment

ability to read and interpret tables

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.11 Checks magnetic contacts on motor controllers.

knowledge of SWP

knowledge of Canadian Electrical Code

knowledge of manufacturer's specifications

knowledge of company procedures

ability to recognize poor contact conditions

screwdrivers, wrenches

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.12 Tests operation of motor controllers.

knowledge of SWP

knowledge of Canadian Electrical Code

knowledge of manufacturer's specifications

knowledge of company procedures

ability to recognize faulty operation

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.13 Checks current flows and voltage to motor.

knowledge of SWP

knowledge of Canadian Electrical Code

multimeter, ammeter, voltmeter, flashlight

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of manufacturer's specifications knowledge of company procedures ability to locate, read and interpret motor name plate data	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.14	Tests insulation resistance of cable and motor.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures ability to operate megohmmeter ability to convert and interpret readings on test voltage charts ability to read and interpret specialized charts	megohmmeter, calculator, temperature correction charts, manufacturer's standard test voltage charts

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.15	Inspects brushes and commutators on DC motors.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures	screwdrivers, wrenches

Sub-tasks		Enabling Objectives	Tools & Equipment
		ability to recognize faulty brush and commutator conditions	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

38.16	Checks input and output voltages and currents to DC and variable frequency drives.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of drive operation knowledge of need for specialized testing equipment ability to operate oscilloscope	oscilloscope, RMS reading meter

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

38.17	Checks operation of mechanical and solid state control relays.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of operation of relays ability to read and interpret drawings	multimeter, ammeter, voltmeter

Sub-tasks	Enabling Objectives	Tools & Equipment
	ability to use specialized testing equipment	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.18	Checks operation of high voltage alternative current (HVAC) systems.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of system operation knowledge of non-electrical symbols ability to read and interpret manufacturer's drawings ability to use specialized testing equipment	multimeter, ammeter, voltmeter, pressure gauges, flow meter, thermometer

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

38.19	Checks voltage and current on high voltage switch gear, using installed meters and transfer switches.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of standard system voltages	

	Sub-tasks	Enabling Objectives	Tools & Equipment
		ability to recognize inappropriate current values ability to operate transfer switches	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

38.20	Checks primary and secondary voltages and currents on oil and dry type transformers.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures ability to locate, read and interpret transformer name plate data	multimeter, ammeter, voltmeter, flashlight

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.21	Checks oil levels and temperatures on transformers.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures ability to locate and read gauges on transformers	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
38.22	Checks operation of ground fault circuit interrupts.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.23	Checks operation and visually inspects power factor correction equipment.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures ability to recognize faulty capacitors ability to recognize incorrect operation	power factor meter, capacitance meter, ohmmeter

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

38.24	Checks operations of uninterruptable power supply systems.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures	

	Sub-tasks	Enabling Objectives	Tools & Equipment
		ability to read and interpret manufacturer's drawings	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

38.25	Tests specific gravity of batteries and/or takes individual cell readings.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of battery types ability to choose correct thermometer ability to use and read hygrometer ability to use temperature correction charts	hygrometer, specialized Personal safety clothing, thermometer

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

38.26	Inspects battery conditions, visually.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures	

	Sub-tasks	Enabling Objectives	Tools & Equipment
		ability to recognize inappropriate battery conditions	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.27	Checks operation of stand-by generation equipment.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of equipment operation ability to read and interpret manufacturer's drawings	timer

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

38.28	Checks fluorescent lighting for failure of electronic and/or magnetic ballasts.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of fluorescent lighting operation ability to recognize failure conditions	ladder, multimeter voltage tester, ballast tester, manlift, scaffold

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
38.29	Checks HID lighting for failure of ballast, capacitors and lamps.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of HID lighting operation ability to recognize failure conditions	ladder, multimeter, voltage tester, ballast tester, manlift, scaffold

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.30	Checks operation of light dimming and control systems.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of light dimming and control systems operation ability to recognize failure conditions	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.31	Checks operation of exit and emergency lighting.	knowledge of SWP knowledge of Canadian Electrical Code	timer, ladder

Sub-tasks		Enabling Objectives	Tools & Equipment
		knowledge of manufacturer's specifications	
		knowledge of company procedures	
		knowledge of exit and emergency lighting	
		ability to recognize failure conditions	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.32	Performs specialized maintenance and testing procedures for exit and emergency lighting.	knowledge of SWP	timer
		knowledge of Canadian Electrical Code	
		knowledge of manufacturer's specifications	
		knowledge of company procedures	
		knowledge of applicable building codes	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

38.33	Performs specialized maintenance and testing procedures for fire alarms.	knowledge of SWP	smoke source, heat source, multimeter
		knowledge of Canadian Electrical Code	
		knowledge of manufacturer's specifications	
		knowledge of company procedures	

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of applicable fire codes	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

38.34	Completes maintenance documentation.	knowledge of documentation requirements ability to communicate in writing ability to complete computerized documents	forms, pen

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

Task 39 Troubleshoots, replaces and repairs electrical equipment, components and devices.

Trend: Increased expertise and knowledge required, greater understanding of solid state components and circuitry.

	Sub-tasks	Enabling Objectives	Tools & Equipment
39.01	Diagnoses problems, and cleans electrical systems, equipment, components and devices.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of appropriate cleaning procedures, equipment and compounds	personal safety equipment, brushes, rags, broom, vacuum cleaner, air hose

	Sub-tasks	Enabling Objectives	Tools & Equipment
		ability to read and interpret WHMIS and Material Safety Data Sheets (MSDS) information	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

39.02	Diagnoses problems, and repairs and/or replaces wiring system components.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of troubleshooting procedures ability to identify the need for repair and/or replacement ability to choose and use specialized equipment and tools	screwdrivers, wrenches, hoisting equipment, strippers, crimpers, multimeter, megohmmeter, wire cutters

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

39.03	Diagnoses problems, and repairs and/or replaces grounding and bonding devices components.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of troubleshooting procedures	thermite weld, hacksaw, file, drill, taps, high pressure (hydraulic) crimper

	Sub-tasks	Enabling Objectives	Tools & Equipment
		ability to identify the need for repair and/or replacement ability to choose and use specialized equipment and tools	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

39.04	Diagnoses problems, and repairs and/or replaces communication systems and components, or informs appropriate personnel about problems.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of troubleshooting procedures ability to identify the need for repair and/or replacement ability to choose and use specialized equipment and tools	screwdrivers

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

39.05	Diagnoses problems, and repairs and/or replaces motor drive and control equipment and components.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications and specialized troubleshooting procedures knowledge of company procedures	multimeter

	Sub-tasks	Enabling Objectives	Tools & Equipment
		ability to identify the need for repair and/or replacement	
		ability to choose and use specialized equipment and tools	
		ability to read and interpret system generated component or device failure messages	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

39.06	Diagnoses problems, and informs appropriate personnel about problems concerning high voltage power distribution systems and equipment.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of troubleshooting procedures ability to identify the need for repair and/or replacement	multimeter

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	no	yes	yes	yes	yes	NV	NV

39.07	Diagnoses problems, and repairs and/or replaces low voltage power distribution components.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures	screwdrivers, wrenches, hoisting equipment, strippers, crimpers, multimeter, megohmmeter, wire cutters

	Sub-tasks	Enabling Objectives	Tools & Equipment
		knowledge of troubleshooting procedures ability to identify the need for repair and/or replacement ability to choose and use specialized equipment and tools	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

39.08	Diagnoses problems and tops up or replaces all liquids in a stand-by power system.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of troubleshooting procedures ability to identify the need for repair and/or replacement ability to choose and use specialized equipment and tools knowledge of correct fluid levels ability to select correct fluid levels ability to read, interpret and follow WHMIS and MSDS information	funnel

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

39.09	Diagnoses problems, and repairs and/or replaces	knowledge of SWP	screwdrivers, wrenches, hoisting

	Sub-tasks	Enabling Objectives	Tools & Equipment
	stand-by power system components, or informs appropriate personnel about problems.	knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of troubleshooting procedures ability to identify the need for repair and/or replacement ability to choose and use specialized equipment and tools ability to distinguish situations where an outside expert is required	equipment, strippers, crimpers, multimeter, megohmmeter, wire cutters

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

39.10	Diagnoses problems and repairs and/or replaces lighting system equipment and components.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures knowledge of troubleshooting procedures ability to identify the need for repair and/or replacement ability to choose and use specialized equipment, and tools	ladder, multimeter, screwdrivers, wire cutters

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	NV	NV

	Sub-tasks	Enabling Objectives	Tools & Equipment
39.11	Updates schematics, drawings and specifications.	knowledge of documentation requirements ability to communicate in writing ability to complete computerized documents	forms, pen, straight edge, pencil

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

39.12	Arranges for disposal of hazardous goods and/or materials.	knowledge of SWP knowledge of Canadian Electrical Code knowledge of manufacturer's specifications knowledge of company procedures ability to read, interpret and follow WHMIS and MSDS information	

NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
yes	yes	yes	no	yes	yes	yes	yes	yes	yes	NV	NV

APPENDICES

TOOLS AND EQUIPMENT

Protective clothing and devices

first aid kit
gloves
goggles/shields
hard hat
hearing protection
insulated gloves
safety belt
safety boots
safety harness

Hand Tools

adjustable wrench
allen key set
brace and bit
cold chisel
crimping pliers
crowbar
files
hack saw
hammer - carpenter's and framing
hickey bar
keyhole saw
knife
knockout cutter
lineman knife
measuring tape
needle nose pliers
nut drivers
pipe benders
pipe cutters
pipe wrench
pliers
pump pliers
reamers
screwdrivers - Robertson 6, 8, 10; Phillips 1, 2; flat blades (3 sizes)
side/diagonal cutters
slip joint
socket set
strippers
tap set
threaders
tin snips
tool belt
torpedo level
wood chisel

Power Tools

battery/rechargeable drill
chop saw
circular saw
grinder
hydraulic bender
jig saw
percussion drill
power drill
power pipe benders, cutters, threaders
reciprocating saw
tugger
vacuum

Measuring Equipment

ammeter
cable locater
circuit analyzer
electromagnetic field meter
frequency meter
ground meter
hi-pot tester
light meter
megohmmeter
multimeter
ohmmeter
oscilloscope
phase rotation meter
recording meter
tachometer
volt meter

Miscellaneous

block and tackle
come-along
communication devices
extension cords
fish tape
flashlight
ladder
picks
portable generator
powder actuated tools
rope
scaffolding
shovels
sledgehammer
soldering apparatus

GLOSSARY

ampacity	load in amps that the house will require.
bonding	connect to ground or interconnect to ensure continuity.
change order	authorization for a change in scope of work or contract.
co-generation system	self-contained power generating system installed in synchronization with power utility.
communication system	electrical system which transmits and receives voice, data, sound.
device	control or usage point of an electrical circuit, e.g. receptacles, switches, fixtures.
distribution	combination of the main and sub-services.
electromagnetic field meter	device that measures an electric or magnetic field, or a combination of the two, as in an electromagnetic wave.
feeder	conductor that transmits electrical energy from point A to point B, e.g. cables, busway.
ground meter	measuring device used to test a conducting path between an electric circuit or equipment and the earth, or some conducting body serving in place of the earth.
hi-pot test	device used to test high voltage cable and terminations for insulations faults.
layout	project plan describing materials and methods as interpreted from plans and specifications.
load	ampacity requirement.
megohmmeter	crank or battery operated device that measures insulation resistance.
meter base	installation point for a utility meter.

raceway	a channel designed to hold wires and/or cables.
taps	termination points on a transformer.

PERCENTAGE RATINGS

BLOCK A **SAFETY**

Task 1 Demonstrates safe working practices and techniques.

BLOCK B **BASIC TRADE PRACTICES**

Task 2 Installs disconnect devices such as switches and breakers.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	35	60	35	23	35	49	20	18	30	24	NV	NV	33%

Task 2 Installs disconnect devices such as switches and breakers.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	12	10	8	8	5	4	8	10	10	4	NV	NV	8%

Task 3 Installs raceways.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	26	25	25	8	40	5	15	10	10	25	NV	NV	19%

Task 4 Installs conductors in raceways.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	12	10	10	8	5	6	15	10	10	11	NV	NV	10%

Task 5 Terminates, splices and connects cables/conductors (ground, power, control, signal, communication and data including fibre optic cables).

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	6	5	10	8	10	13	6	5	10	5	NV	NV	8%

Task 6 Installs direct-buried cables and/or conductors.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	3	5	5	8	1	4	6	4	5	1	NV	NV	4%

Task 7 Installs surface mount and/or overhead cables.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	5	5	10	8	5	4	6	4	5	15	NV	NV	7%

Task 8 Installs lighting systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	15	10	10	8	10	19	8	4	10	16	NV	NV	11%

Task 9 Installs electrical heating/cooling and heat tracing systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	9	5	2	2	5	10	6	5	5	3	NV	NV	5%

Task 10 Determines and classifies hazardous locations for appropriate selection of materials and methods.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	1	2	2	8	1	1	3	1	2	1	NV	NV	1%

Task 11 Uses instruments to test and measure voltage, loads, ground faults, integrity of circuits, etc.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	2	3	3	8	1	10	3	2	5	1	NV	NV	4%

Task 12 Renovates electrical systems in residential or commercial structures.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	3	10	8	8	5	17	8	20	8	11	NV	NV	10%

Task 13 Grounds and bonds electrical equipment, systems and structures, including swimming pools and hot tubs.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	2	3	2	10	2	3	6	10	10	2	NV	NV	5%

Task 14 Installs splitters, busways, pull boxes and junction boxes.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	4	7	5	8	10	4	10	15	10	5	NV	NV	8%

BLOCK C BASIC JOB SKILLS

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	2	2	5	22	5	8	10	2	10	6	NV	NV	7%

Task 15 Completes required documentation related to job functions.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	14	30	20	15	10	37	10	20	25	25	NV	NV	20%

Task 16 Reads and interprets architectural, mechanical and electrical plans, specifications and codes.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	34	40	30	50	60	27	50	20	50	45	NV	NV	41%

Task 17 Analyzes job requirements and coordinates resources and activities accordingly.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	52	30	50	35	30	36	40	60	25	30	NV	NV	39%

BLOCK D DISTRIBUTION AND SERVICES

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	14	10	15	12	10	7	15	22	10	13	NV	NV	13%

Task 18 Designs and constructs single-phase service for single or multimeter installations.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	20	20	30	25	5	19	15	20	10	7	NV	NV	17%

Task 19 Designs and constructs low voltage (30 to 750V) multiphase service for single or multimeter installations.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	19	20	20	15	15	23	25	30	10	15	NV	NV	19%

Task 20 Designs and constructs secondary distributions.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	20	30	25	20	45	9	15	10	35	21	NV	NV	23%

Task 21 Installs high voltage (greater than 750V) systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	7	5	1	10	10	0	5	5	5	6	NV	NV	5%

Task 22 Installs transformers in low voltage (30V - 750V) distribution systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	13	10	5	10	15	17	10	5	10	23	NV	NV	12%

Task 23 Installs panel boards.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	21	15	19	20	10	32	30	30	30	28	NV	NV	24%

BLOCK E BRANCH CIRCUIT WIRING

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	18	12	20	13	10	8	20	8	15	19	NV	NV	14%

Task 24 Plans installation of branch circuits.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	12	10	20	40	10	32	10	10	5	14	NV	NV	16%

Task 25 Roughs in branch circuits.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	65	55	45	30	70	35	60	45	65	54	NV	NV	53%

Task 26 Finishes branch circuits.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	23	35	35	30	20	33	30	45	30	32	NV	NV	31%

BLOCK F MOTORS AND MOTOR CONTROLS

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	10	2	5	6	10	2	8	14	5	11	NV	NV	7%

Task 27 Installs AC and DC motors.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	60	30	45	35	10	40	50	20	30	50	NV	NV	37%

Task 28 Installs controls for AC and DC motors.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	40	70	55	65	90	60	50	80	70	50	NV	NV	63%

BLOCK G CONTROLS AND AUTOMATION SYSTEMS

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	5	5	5	7	5	2	8	11	5	6	NV	NV	6%

Task 29 Installs programmable logic controllers (PLC) and associated devices.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	36	10	20	20	10	4	20	55	5	13	NV	NV	19%

Task 30 Installs controls for heating and cooling equipment.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	31	40	60	40	50	28	30	9	20	28	NV	NV	34%

Task 31 Installs lighting controls.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	33	50	20	40	40	68	50	36	75	59	NV	NV	47%

BLOCK H ALARMS AND SIGNALLING SYSTEMS

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	6	5	3	5	6	2	7	1	5	9	NV	NV	5%

Task 32 Installs fire alarm and paging (such as nurse call) systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	43	50	80	50	30	75	55	95	50	68	NV	NV	60%

Task 33 Installs security, communication and data systems in offices, residences or industrial complexes.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	57	50	20	50	70	25	45	5	50	32	NV	NV	40%

BLOCK I **INSTALLATION OF POWER GENERATION, STAND-BY POWER GENERATION AND POWER CONDITIONING SYSTEMS**

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	3	2	2	4	4	5	5	6	5	9	NV	NV	5%

Task 34 Installs power generation systems and associated equipment.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	21	20	25	20	40	11	10	2	10	24	NV	NV	18%

Task 35 Installs uninterruptible power supply (UPS) systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	9	15	40	20	30	8	35	28	10	19	NV	NV	21%

Task 36 Installs battery operated emergency lighting systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	61	50	30	50	20	70	20	35	70	45	NV	NV	46%

Task 37 Installs power conditioning equipment on AC systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	9	15	5	10	10	11	35	35	10	12	NV	NV	15%

BLOCK J **ROUTINE MAINTENANCE, TROUBLESHOOTING, REPLACEMENT AND REPAIR OF EQUIPMENT, COMPONENTS AND DEVICES**

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	7	2	10	8	15	17	7	18	15	3	NV	NV	10%

Task 38 Performs routine maintenance tests and checks on installed equipment, components and devices.

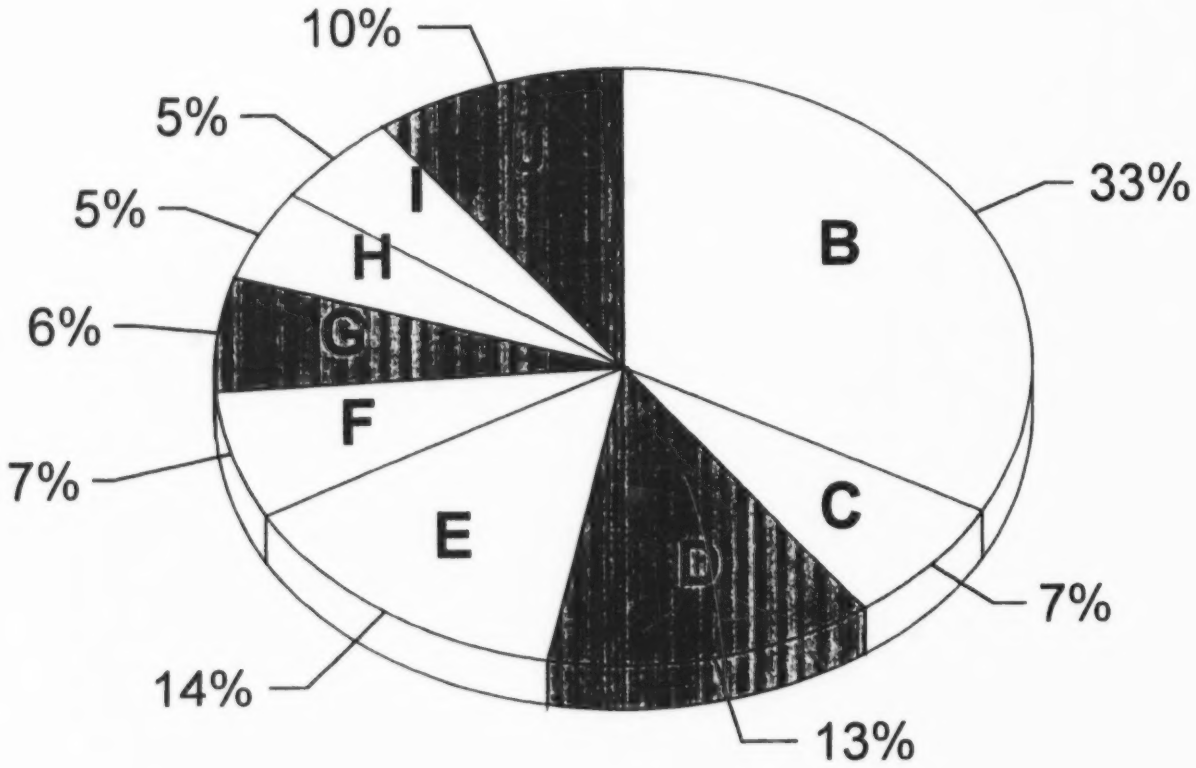
%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	60	35	30	40	25	40	30	20	50	42	NV	NV	37%

Task 39 Troubleshoots, replaces and repairs electrical equipment, components and devices.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	40	65	70	60	75	60	70	80	50	58	NV	NV	63%

BLOCK PERCENTAGES*

Construction Electrician



* The average time a worker spends performing each block in a given year in relation to other blocks of the analysis, taking into consideration the complexity (importance plus difficulty) of the block.

TITLE OF BLOCKS

A	SAFETY**
B	BASIC TRADE PRACTICES
C	BASIC JOB SKILLS
D	DISTRIBUTION AND SERVICES
E	BRANCH CIRCUIT WIRING
F	MOTORS AND MOTOR CONTROLS
G	CONTROLS AND AUTOMATION SYSTEMS
H	ALARMS AND SIGNALLING SYSTEMS
I	INSTALLATION OF POWER GENERATION, STAND-BY POWER GENERATION AND POWER CONDITIONING SYSTEMS
J	ROUTINE MAINTENANCE, TROUBLESHOOTING, REPLACEMENT AND REPAIR OF EQUIPMENT, COMPONENTS AND DEVICES

** Since safety practices are a mandatory feature of all occupations, they are considered common core, ratings are not required and thus Block A does not appear on the chart.